HONORABLE THOMAS S. ZILLY

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8   UNITED STATES DISTRICT COURT
                                WESTERN DISTRICT OF WASHINGTON
9   AT SEATTLE

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INTERNATIONAL BUSINESS MACHINES   Case No.: 2:20-cv-01130-TSZ
11   CORPORATION,

12   Plaintiff,   FIRST AMENDED COMPLAINT FOR
                                                 PATENT INFRINGEMENT
13   v.

14   ZILLOW GROUP, INC., and ZILLOW, INC.,   JURY TRIAL DEMANDED

15   Defendants.

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FIRST AMENDED COMPLAINT FOR PATENT   LAW OFFICES
INFRINGEMENT   **HARRIGAN LEYH FARMER & THOMSEN LLP**
                                                       999 THIRD AVENUE, SUITE 4400
Case No. 2:20-cv-01130-TSZ   SEATTLE, WASHINGTON 98104
                                                  TEL (206) 623-1700 FAX (206) 623-8717

1   **FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

2   Plaintiff International Business Machines Corporation ("IBM"), for its First Amended

3   Complaint for Patent Infringement against Zillow Group, Inc. and Zillow, Inc. (collectively

4   "Defendants" or "Zillow"), demands a trial by jury on all issues so triable and alleges as follows:

5   **BACKGROUND**

6   1.   IBM and Zillow are already involved in a pending lawsuit concerning Zillow's willful

7   infringement of seven patents. That lawsuit was the result of Zillow's refusal to negotiate a license

8   and end its unauthorized use of IBM's intellectual property after more than three years of

9   unproductive discussions.

10   2.   This lawsuit is the result of Zillow's decision to escalate its behavior by willfully

11 infringing five additional patents. On November 25, 2019, IBM sent a letter informing Zillow that

12 it was infringing four of those new patents, and provided the detailed evidence of infringement

13 attached to this Complaint as Exhibits 3, 5, 7, and 9. In response, Zillow dismissed IBM's letter as

14 a "distraction" and refused to discuss—or even "acknowledge the receipt" of—evidence showing

15 Zillow's infringement of any patents outside of litigation. IBM urged Zillow to reconsider its

16 position and engage in negotiations for a license. On December 13, 2019, IBM informed Zillow that

17 it was infringing the fifth new patent, and provided the detailed evidence of infringement attached

18 to this Complaint as Exhibit 11. Again, IBM urged Zillow to reconsider its policy of willful

19 blindness. True to its word, Zillow refused to respond to (or even acknowledge) that evidence of

20 additional infringement. Zillow has given IBM no option but to litigate.

21   **INTRODUCTION**

22   3.   IBM is in the innovation business. Every year, IBM spends billions of dollars on

23 research and development to invent, market, and sell new technology. For example, through its

24 investments and innovations in the new frontier of quantum information science, IBM is the leader

25 in commercializing quantum computing, once thought to be a purely academic exercise. IBM's Q

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1 Network service—a community of Fortune 500 companies, academic institutions, research

2 organizations, and startups working with IBM to advance quantum computing—now has over 100

3 members.

4   4.   IBM obtains patents on the technology its inventors develop. The United States

5 Patent Office awards thousands of patents to IBM each year. In fact, for each of the last 27 years,

6 the Patent Office has awarded IBM more patents than any other company. Each of those patents

7 grants IBM protection from those who would take its technology without permission. Those patents

8 are critical to IBM's business and its licensing philosophy.

9   5.   For over twenty years, IBM has been a strong proponent of open source technologies.

10 IBM was a founding member of Open Invention Network, the largest patent non-aggression

11 community in history, which supports freedom of action in Linux, a key element of open source

12 software. IBM has also pledged to provide open access to key innovations covered by hundreds of

13 IBM software patents for those working on open source software. And early in 2020, IBM joined

14 the License on Transfer Network ("LOT Network"), a non-profit community of companies that

15 supports open innovation and responsible stewardship of technology. LOT Network affirms the

16 traditional use of patents—safeguarding the innovations of companies who research, develop, and

17 sell new technologies—while protecting its members against companies who purchase or acquire

18 patents from others. In addition, in April 2020, IBM pledged to grant free access to its patent

19 portfolio to those developing technologies to help diagnose, prevent, contain or treat coronaviruses,

20 including the one that causes COVID-19. This pledge covers thousands of IBM AI patents,

21 including Watson technology patents, as well as dozens of active U.S. patents in the general area of

22 biological viruses.

23   6.   IBM also believes in the protection of its proprietary technologies, which result from

24 IBM's extensive investments in research and development and the hard work of IBM's employees.

25 IBM believes that companies who use IBM's patented technology should agree to a license and pay

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1 a fair royalty. When a company is using IBM's patents without authorization, IBM first seeks to

2 negotiate an agreement whereby IBM and the other company each receive a license to the other's

3 patent portfolio. That way, each company can avoid litigation, be fairly compensated for the use of

4 all of its patents, and maintain freedom to operate in its respective markets.

5   7. IBM's research and development is currently focused on technology that includes

6 quantum computing, hybrid cloud solutions, security, big data analytics, artificial intelligence, and

7 natural language processing. But IBM also has a long history of innovating and licensing its

8 technology in the field of internet commerce. In fact, long before Zillow existed, IBM partnered

9 with other companies to launch Prodigy, one of the very first e-commerce services. Zillow, which

10 was founded in 2004, long after e-commerce was already established, took those prior innovations

11 made by IBM and others to create and run its new business.

12   8. Dozens of similar companies, including Amazon, Apple, Google, and Facebook,

13 have agreed to cross licenses with IBM. Unfortunately, Zillow is not among them. Instead, Zillow

14 has chosen to willfully infringe the five patents in this lawsuit without even considering licensing

15 discussions. This lawsuit seeks to stop Zillow's continued and unauthorized use of IBM's patents.

16 **NATURE OF THE CASE**

17   9. This action arises under 35 U.S.C. § 271 for Zillow's infringement of IBM's United

18 States Patent Nos. 6,778,193 ("the '193 patent"), 6,785,676 ("the '676 patent"), 7,543,234 ("the '234

19 patent"), 9,569,414 ("the '414 patent"), and 10,115,168 ("the '168 patent") (collectively the

20 "Patents-In-Suit").

21 **THE PARTIES**

22   10. Plaintiff IBM is a New York corporation with its principal place of business at 1 New

23 Orchard Road, Armonk, New York 10504.

24   11. Defendant Zillow Group is a Washington corporation with a principal place of

25 business at 1301 Second Avenue, Floor 31, Seattle, Washington 98101.

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1   12.   Zillow Group "operates the largest portfolio of real estate and home-related brands

2   on mobile and the web which focus on all stages of the home lifecycle: renting, buying, selling and

3   financing."[1] Zillow Group provides a "comprehensive suite of marketing software and technology

4   solutions to help real estate, rental, and mortgage professionals maximize business opportunities and

5   connect with millions of consumers."[2] Zillow Group generates revenue at least based on the "sale

6   of advertising under [its] Premier Agent and Premier Broker programs."[3] Zillow Group's portfolio

7   of real estate and home-related brands includes Zillow. Zillow Group owns and completely controls

8   Zillow, Inc.

9   13.   Defendant Zillow, Inc. is a Washington corporation with a principal place of business

10   at 1301 Second Avenue, Floor 31, Seattle, Washington 98101.

11   14.   Zillow, Inc. operates the Zillow website, including at least www.zillow.com,

12   www.zillowgroupmedia.com, and subdomains thereof, and the Zillow mobile applications,

13   including at least the iOS and Android Zillow Real Estate & Rentals, Zillow Rentals, and Zillow

14   Premier Agent applications. Zillow, Inc. provides online real estate listings and related services to

15   consumers and local real estate agents through Zillow's website and through Zillow mobile

16   applications.

17   **JURISDICTION AND VENUE**

18   15.   IBM incorporates by reference paragraphs 1-14.

19   16.   This action arises under the patent laws of the United States, including 35 U.S.C.

20   § 271 *et seq.* The jurisdiction of this Court over the subject matter of this action is proper under 28

21   U.S.C. §§ 1331 and 1338(a).

22   17.   Venue in the Western District of Washington is proper pursuant to 28 U.S.C.

23   §§ 1391(b) and (c) and 1400(b). Zillow Group and Zillow, Inc. are entities organized under the laws

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[1] Ex. 1 (Zillow Group 2018 10-K) at 3.

25   [2] *Id.*
[3] *Id.*

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1 of Washington and reside in Washington for purposes of venue under 28 U.S.C. § 1400(b). Zillow

2 Group and Zillow, Inc. conduct business in Washington, at least by offering for sale and selling

3 products and services through Defendants' websites and mobile applications, which are accessible

4 in Washington. Infringement has occurred and continues to occur in Washington.

5   18.   Personal jurisdiction exists over Defendants because Zillow Group and Zillow, Inc.

6 are entities organized under the laws of Washington. Personal jurisdiction also exists over

7 Defendants because Zillow Group and Zillow, Inc. conduct business in Washington, at least by

8 offering for sale and selling products and services through Defendants' websites and mobile

9 applications, which are accessible in Washington, and because infringement has occurred and

10 continues to occur in Washington.

11   **FACTUAL BACKGROUND**

12 **A.   IBM Is A Recognized Innovator.**

13   19.   IBM is recognized throughout the world as a pioneer in many aspects of science and

14 technology. On ten occasions—more times than any other company or organization—IBM has been

15 awarded the U.S. National Medal of Technology, the nation's highest award for technological

16 innovation. During IBM's over 100-year history, IBM's employees have included six Nobel

17 laureates, five National Medal of Science recipients, and at least fourteen inventors in the National

18 Inventors Hall of Fame.

19   20.   These and other IBM employees have introduced the world to technology that the

20 global community takes for granted today, including the dynamic random access memory (DRAMs)

21 found in nearly all modern computers; magnetic disk storage (hard disk drives) found in computers

22 and portable music players; and some of the world's most powerful supercomputers, including Deep

23 Blue, the first computer to beat a reigning chess champion. IBM's commitment to developing these

24 types of advanced computing technologies has helped to usher in the information age.

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B.   IBM Is Committed To Protecting Its Innovations Through The Patent System.

21.   IBM's research and development operations differentiate IBM from many other companies. IBM annually spends billions of dollars for research and development. In addition to yielding inventions that have literally changed the way in which the world works, IBM's research and development efforts have resulted in more than 60,000 patents worldwide.

22.   Like the research upon which the patents are based, IBM's patents also benefit society. Indeed, the Supreme Court has recognized that the patent system encourages both the creation and the disclosure of new and useful advances in technology. Such disclosure, in turn, permits society to innovate further. And, as the Court has further recognized, as a reward for committing resources to innovation and for disclosing that innovation, the patent system provides patent owners with the exclusive right to prevent others from practicing the claimed invention for a limited period of time.

C.   IBM Routinely Licenses Its Patents In Many Fields But Will Enforce Its Rights

Against Those Who Use Its Intellectual Property Unlawfully.

23.   IBM's commitment to creating a large patent portfolio underscores the value that IBM places in the exchange of innovation, and disclosure of that innovation, in return for limited exclusivity. Indeed, IBM has used its patent portfolio to generate revenue and other significant value for the company by executing patent cross-license agreements. The revenue generated through patent licensing enables IBM to continue to commit resources to innovation. Cross licensing, in turn, provides IBM with the freedom to innovate and operate in a manner that respects the technology of others.

24.   Given the investment IBM makes in the development of new technologies and the management of its patent portfolio, IBM and its shareholders expect companies to act responsibly with respect to IBM's patents. IBM facilitates this by routinely licensing its patents in many fields and by working with companies that wish to use IBM's technology in those fields in which IBM

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1   grants licenses. When a company appropriates IBM's intellectual property but refuses to negotiate

2   a license, IBM has no choice but to seek judicial assistance.

3   **D.   IBM Invented Methods Of Improving Contextual Searching Using Visual**

4   **Workspaces.**

5   25.   The inventors of the '193 patent developed the patented technology as part of IBM's

6   efforts to improve graphical user interfaces ("GUIs") for customer self-service search and retrieval

7   systems.[4] Customer search and retrieval may include knowledge management systems, information

8   portals, search engines, and data miners. Providing efficient and satisfactory search results using

9   such systems requires that users provide relevant contextual information in conjunction with a search

10   query. At the time of the invention, engineers attempted to solve this problem through the use of

11   GUIs, which represented available applications and datasets via icons. For example, each icon

12   displayed on the GUI represented a particular function, variable, or command to be specified by the

13   user. Icons on graphical user interfaces replaced the older command line interfaces, which required

14   the user to memorize and input complex commands in order to execute the same functions on the

15   computer. However, these prior art GUIs failed to address the full range of relevant contextual

16   variables for user queries, and also did not provide a graphical method for fine tuning the relevant

17   context variables.

18   26.   The inventors of the '193 patent thus recognized a need to provide an improved GUI

19   for customer search and retrieval functions to facilitate the efficient location of relevant resources in

20   response to a query by enabling the expression of a user's context as part of the query and indicating

21   the relevance of returned results in that context. The inventors of the '193 patent developed systems

22   and methods of using user context attributes and GUIs to allow users to search for content and

23   subsequently narrow the results based on user context to obtain increased specificity and accuracy

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[4] For additional discussion regarding the problems of customer self-service search and retrieval systems prior to the '193 patent, solutions to this problem, and inventive aspects related to the '193 patent, see Ex. 12 (Declaration of Daniel Oblinger).

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1   in search results. The patented technology of the '193 patent provides for more efficient search and

2   retrieval in part through a novel iconic GUI that enables the expression of a user's context as part of

3   the user query, which has the benefit of minimizing user time and resource intensive system

4   processes. For example, the most efficient search processes of the '193 patent reduce the server

5   processing steps required to provide relevant search results and thus allow the server to process

6   search queries faster.

7   27.   One of the inventive aspects of the '193 patent was the set of various visual

8   workspaces, along with the mechanism for the user to navigate among these workspaces within the

9   same graphical user interface. This was a unique solution to the problem of crowding on the interface

10   when a large set of icons or selection criteria are made available to the user: The inventors separated

11   the full interface into two or three separate "visual workspaces," and presented a separate set of

12   information on each workspace. They structured those workspaces so that each carried out an

13   important function in the search process.

14   28.   One of the visual workspaces was the "cockpit" of the system (like an airplane

15   cockpit) where the user initially specifies the materials that should be presented to him or her through

16   the selection of one or multiple graphical user context icons, which specify different contextual

17   attributes about the user. Through this workspace, the search system could initially learn about the

18   user. Another workspace gave the user the option to review many different search results at the

19   same time, and was the "10,000 foot view" of the full data space. In this workspace, the user could

20   view and interact with many different results, but those results were just a fraction of the full n-

21   dimensional data space. Since the user does not know the full contents of the entire data space (and

22   can only see the specific set of results returned), the search system can learn about the user and their

23   interests based on the user's interaction with this portion of the full data space. A third visual

24   workspace allowed the user to get inside the "engine" of the search system itself, and make specific

25   tweaks and corrections to their user context and search parameters through graphical user elements

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1   that can manipulate a variety of different variables.

2   29.   Specifically, one of the key innovative aspects of the invention of the '193 patent was

3   not just the multiple visual workspaces alone, but how these various visual workspaces build upon

4   each other and interact with each other. For example, a user's interactions in the visual workspace

5   corresponding to the "cockpit" (where graphical user context icons are selected) changes the way

6   that the "engine room" visual workspace (where user context and other search parameters are

7   specified and refined) appears and behaves. The use of one visual workspace to affect the others in

8   a closed-loop feedback system is an innovative aspect of the patented system

9   30.   Another innovative aspect of the '193 patent was the mechanism allowing users to

10   navigate from one visual workspace to another in a fluid closed-loop system. A conventional search

11   "wizard" system would walk the user through a pre-set sequence of displays in order, once, to specify

12   search criteria, with the end result being the display of a set of search results. But, going back to the

13   airplane analogy, the invention of the '193 patent allows the user to reconfigure the engine during

14   flight: the user may freely navigate through the workspaces and modify the set of resources that will

15   be returned to them.

16   31.   This is a different and improved computer wizard: a "soft wizard" system. While the

17   system provides access to various workspaces, the user is also free to navigate the workspaces in

18   whatever manner they wish, however many times they wish, or not at all. The interface of the '193

19   patent is therefore an improvement over the conventional search portal system (where the user

20   submits a query to search for results with precise control of the input but no help in designing the

21   input) as well as an improvement over the search wizard system (where the user must walk through

22   a predetermined series of interfaces in order to complete a search, and has no control over the search

23   experience). In the "soft wizard" system of the '193 patent, the multiple visual workspaces have a

24   designated trajectory, but the user is not limited to following this trajectory, and may jump between

25   the workspaces to dynamically alter the search specification. Additionally, because the search

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1   system is "intelligent" and is aware of the previous actions of the user, the user interface adapts based

2   on the user's past actions, to gently guide the user towards anticipated areas of interest. The system

3   therefore provided a graphical user interface where the user has the full ability to specify both the

4   broad and narrow aspects of their user context, directly training the underlying search system in the

5   process.

6   **E.   IBM Invented Methods For Improving Searching Using Real-Time Incorporation Of**

7   **Contextual Information.**

8   32.   The inventor of the '676 patent developed the patented technology as part of IBM's

9   efforts to improve search mechanisms for customer self-service search and retrieval systems.[5]

10 Customer self-service search and retrieval systems may include knowledge management systems,

11 information portals, search engines, and data miners. Providing efficient and satisfactory search

12 results using such systems could be improved by incorporating relevant contextual information about

13 the user. At the time of the invention, conventional customer self-service search and retrieval

14 systems required users to input their contextual information when conducting each search query.

15 However, these prior art search mechanisms failed to utilize the contextual information to rank

16 search results and did not change these rankings over time, even as the user's contextual information

17 changed. The prior art search mechanisms ranked search results without adapting to the current state

18 of the user's interactions with the system and, therefore, failed to prioritize the search results most

19 relevant to the user.

20   33.   The inventor of the '676 patent recognized a need for an improved method of

21 annotating and ranking search results in real-time using up-to-date contextual information about the

22 user. The inventor of the '676 patent developed systems and methods of classifying a user's

23 context—by using a search query and raw contextual information inputted by the user and comparing

24 _____

25 [5] For additional discussion regarding the problems of customer self-service search and retrieval
    systems prior to the '676 patent, solutions to this problem, and inventive aspects related to the '676
    patent, see Ex. 12 (Declaration of Daniel Oblinger).

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1   this information against both the interaction history of the user and data from a context attribute

2   database—to generate a set of context parameters that are specific to the current user. The

3   technology of the '676 patent also provides for more efficient retrieval of search results through the

4   use of an adaptive algorithm, which maps specific search results not only to the user's search query,

5   but also to a user context vector containing the context parameters for the user. Moreover, the

6   technology of the '676 patent comprises systems and methods for generating a more specific,

7   accurate, and personalized set of search results using an ordering and annotation function which

8   ranks the search results based on the user context, and is executed interactively, each time that a user

9   inputs a new search query. The invention of the '676 patent applies machine learning technology to

10   the customer self-service system using a combination of supervised and unsupervised logic, thereby

11   enabling the system to adapt how it ranks resources in accordance with a user's changing context,

12   without requiring the user to explicitly input contextual information. The systems and methods of

13   the '676 patent provide for a more efficient search and retrieval process, which greatly reduces the

14   user time and resource intensive system processes required to provide relevant search results.

15   34.   Machine learning technology is central to the '676 patent. Machine learning can be

16   thought of as a way to analyze rows and columns of information to predict the results that would be

17   most appropriate for the user. Each row corresponds to a specific data item, and each column

18   corresponds to an attribute to be predicted. For any given problem, one of the columns may

19   correspond to a target attribute value that the system wants to predict at a particular point in time.

20   The approach for collecting and processing the data to populate the necessary rows and columns,

21   and predict the target attribute values was a persistent challenge to persons of ordinary skill in the

22   art at the time. More specifically, because the user's open-ended interactions with the search system

23   (such as selecting icons on the user interface, entering queries into the query box, etc.) do not easily

24   translate into the fixed set of columns utilized by the machine learning model, an innovative

25   approach is required to map these types of data.

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35.   One innovative aspect of the system of the '676 patent is the use of a user context vector containing both data associated with a user's interaction state and contextual data about a user. The user context vector would populate a wide variety of contextual information specific to a particular user through a back-and-forth interaction between the user and the computer system as the user interacts with the customer self-service system. Through the user context vector of the patented invention, the system was able to combine heterogeneous data about a user from a wide variety of sources (such as the user's background, skill level, intentions and goals, history of searching, trajectory of previous learning through the curriculum's course materials, etc.), which is not structured as a fixed vector of data values, and thus is not directly usable by a conventional learning algorithm. One of the innovations was to transform this user history and other data into a fixed length vector, which is directly usable by a learning algorithm. The heterogeneous data is transformed into a homogeneous data structure with strong predictive value regarding the user's interests. In other words, the system had the ability to look at a user's past history of interaction, and translate each interaction or data point into a different aspect of the user's overall context, thus comprising a machine-learning algorithm that could intelligently predict which resources are best suited to the user.

36.   Another innovative aspect of the invention of the '676 patent is the utilization of the user context vector in order to execute an ordering and annotation function. The system of the patented invention would map the user context vector with a set of responsive search results in order to generate an annotated set of resources, or search results. The annotations affect, among other things, the order that the resources are presented to a user of the system, and is a particular way of summarizing and presenting information from the returned resources in electronic devices. This method of going from a user context vector to a particular set of resources solved the "more is not always better" problem of info overload in search systems at the time, by returning a set of information that was not only ordered in a meaningful manner specific to the user, but also annotated

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1   for the system and the user.

2   **F.   IBM Invented Methods Of Stacking Portlets In Portal Pages.**

3   37.   The inventors of the '234 patent developed the patented technology as part of IBM's

4   efforts to improve customizable portal pages. Unlike traditional off-line media, portal pages on

5   computer screens, tablets, mobile devices, and other media allow the display of dynamically updated

6   information aggregated from different sources based on user preferences. A portal page may be

7   comprised of individual portlets, which access hardware and software to gather data and offer

8   information to portal pages. Portals and portlets can be associated with preferences selected by the

9   user and thus can provide an effective mechanism to view information of interest from a variety of

10 sources at the same time. However, as the number of portlets increase, portal pages can become

11 overcrowded and disorganized. In the prior art, overcrowding resulted in cluttered portal pages that

12 inhibited the user from effectively viewing and interacting with all of the available portlets. That

13 problem was unique to computer systems, because unlike traditional media, such as newspapers,

14 magazines, and books, portals and portlets are not limited to predetermined content, information

15 sources, or static areas of display.

16   38.   The inventors of the '234 patent recognized a need to improve the customization of

17 portal pages. They developed a novel approach for organizing and displaying portlets on a portal

18 page. That method includes determining whether a subset of portlets is stackable. The inventors

19 realized that portlets could be stackable if they have certain characteristics in common, such as

20 common hardware resources accessed, software resources accessed, content elements, or markup

21 elements. A group of stackable portlets could then be arranged into a stack on the GUI. In a stack,

22 multiple portlets could be grouped together such that two or more portlets occupy less space than

23 they would individually, thereby reducing portlet clutter. The user may navigate between the portlets

24 that comprise a stack of portlets using selection methods such as forward and back buttons or a scroll

25 bar. One portlet in a stack could be presented at the top of the stack at a given time. Alternatively,

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1   multiple portlets in the stack could be presented at the top of the stack at once. For example, forty

2   portlets could be stacked with five portlets presented at a time. Multiple stacks of portlets are then

3   arranged into a stack of stacks of portlets. The method could provide a control for the user to select

4   a different stack of portlets not currently presented to the user from the stack of stacks of portlets.

5   39.   By developing a method for stacking stacks of portlets and allowing users to select

6   which stack to display, the inventors resolved the issue of the cluttered portal page with a new and

7   improved way of organizing and displaying the portlets comprising portal pages. The '234 patent

8   thus extends the benefits of portal pages by allowing users to interact effectively with portal pages

9   and generate as many portlets as they prefer—without overcrowding their device screens.

10   Specifically, the '234 patent discloses and claims novel methods of organizing portlets not only as

11   "stacks" but as "stacks of stacks," such that only a subset of portlets may be presented at any given

12   time, based on characteristics such as common hardware, software, content type, markup, user

13   profiles, and user preferences.

14   40.   In order to implement this invention, the inventors of the '234 patent developed a

15   particular approach and corresponding software framework that combined several key features.[6]

16   41.   First, in the invention of the '234 patent, the graphical user interface comprises a

17   portal page that is dynamically generated. The portal page aggregates information from a variety of

18   different sources, and the generation of the portal page is "dynamic" because when the user returns

19   to the portal page, the portal pulls the most current information from each information source

20   displayed on the page. *See* '234 patent at 1:11-13. When the data changes at its source, the portal

21   page updates to reveal that change to the user, without an explicit request from the user. This is in

22   contrast to earlier graphical user interfaces such as basic file and directory structures of a browser

23

24   _____

     [6] For additional discussion regarding the problems of organizing, retrieving, and displaying
     information on graphical user interfaces of computing systems prior to the '234 patent, solutions to
25   this problem, and inventive aspects related to the '234 patent, see Ex. 13 (Declaration of Andrew
     Cockburn).

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1   hierarchy, where the user was required to manually organize each piece of information into static

2   folders, and return to each individual source to pull updated information as the sources changed. By

3   dynamically generating the portal page, the user is relieved of the burden of having to manually

4   stipulate the information sources and organize them on the page.

5   42.   In enabling these dynamic updates, the '234 patent describes that the portal can be

6   generated based on the information contained within a user profile. *See* '234 patent at 2:40-44. The

7   user profile stores customized information relating to the user's interests and requirements. In this

8   way, the portal is automatically and dynamically generated to contain information that is current and

9   customized for the user. And further, the computer system may detect the user's identity and

10 interests without even requiring the user to login (such as by placing a "cookie" on the user's

11 computer system). *Id.* at 2:42-44. When the user revisits the portal page, it is automatically

12 reconstructed and updated without requiring the user to manually reconfigure the page content (for

13 example, by re-entering search terms) or layout (for example, by adjusting the location of page

14 components).

15   43.   Second, in the invention of the '234 patent, the computer systems determine the

16 optimal manner to organize groups of portlets into "stacks" by determining which portlets are

17 "stackable." In this process, the system automatically identifies whether there exists a set of common

18 attributes across a set of portlet data items, and if so, the data items with common attributes are

19 gathered together into stacks of related items. *See* '234 patent at 1:46-49. The common attributes

20 used to determine whether portlets are stackable may relate to various properties of portlet data items,

21 including those relating to software, hardware, content, and markup. *Id.*

22   44.   This is in contrast to prior art search interfaces, such as the basic search interface or

23 the user-defined filtering interface, where either the computer system will retrieve only the data items

24 that precisely fit each of the specific search parameters specified by the user, and organize them into

25 one basic, scrollable list, or where the user is required to specify a complicated rule set of filters that

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1   determines how incoming data items are sorted on the graphical user interface. By inventing a

2   computer system that automatically determines whether portlets are "stackable," the computer

3   system is able to present large quantities of information from disparate sources on the graphical user

4   interface in the manner that is most logical, with no user input required. And by grouping related

5   portlets into a stack that is displayed together within the portal page, the user can better visualize the

6   relationship between data items of interest, thereby facilitating the selection of individual portlet

7   items of interest.

8   45.   The common attributes that are used to determine whether portlet data items are

9   stackable can also be derived from a user profile or from user preferences. *See* '234 patent at 4:57-

10 5:3. By allowing the user profile and/or user preferences to influence the determination of stackable

11 portlets, the portal page can be automatically customized to the user's interest.

12   46.   Third, in the invention of the '234 patent, a group of portlets with sufficient attributes

13 in common are first arranged into a "stack," and each stack is then arranged on the graphical user

14 interface into a "stack of stacks." *See* '234 patent at 8:16-27. In contrast to earlier graphical user

15 interface displays, such as simple data lists sortable by a single attribute, the user of the system of

16 the '234 patent can browse through information that has been organized by multiple dimensions.

17   47.   Generating the portal page as a stack of stacks also reduces clutter and crowding in

18 the display of the graphical user interface. Instead of generating a display that concurrently displays

19 multiple stacks of related portlet data items separately (where each stack of portlets may be of interest

20 to the user at some time), the invention disclosed in the '234 patent groups related stacks of portlets

21 into a further level of organization, or a stack of stacks. Crowding and clutter in the display is

22 therefore reduced because only a first stack is initially presented to the user, instead of multiple

23 concurrently displayed stacks.

24   48.   Fourth, in the invention of the '234 patent, a first stack of portlets is presented to the

25 user at a time, and the graphical user interface also features a control that the user can manipulate in

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1   order to view a second stack of portlets that is not currently presented. *See* '234 patent at 8:25-27.

2   In this manner, the user can easily switch between the portlet data items presented in each stack.

3   This substantially eases the user's transition between different views of data within the portal page,

4   without introducing clutter and crowding to the display. Furthermore, if the first presented stack of

5   portlets does not conveniently fulfill the user's information need, the user can easily transition to a

6   different view that better matches their need. This is an improvement over earlier graphical user

7   interface display systems such as a data list sortable by a single attribute, wherein the user is required

8   to manually scroll through all of the listings responsive to their search.

9   **G.**   **IBM Invented Methods, Frameworks, and Program Products For Formatting And**

10   **Serving Web Content.**

11   49.   The inventors of the '414 patent developed the patented technology as a way to

12   improve web development by simplifying and optimizing the generation and display of dynamic

13   content. Prior to the '414 patent, web developers who wished to embed dynamic content on their

14   websites would typically embed a URL that called to a JavaScript library to add in the dynamic

15   content. The dynamically generated JavaScript library contained the content to be displayed and

16   provided a function to embed that content directly on to the page. A web developer could adjust the

17   look and feel of the website by using cascading style sheets (CSS), but this approach was very limited

18   on the type of formatting that could be performed on the data. Web developers were thus essentially

19   restricted by the formatting provided by the JavaScript library that they called. If the developer

20   wanted different formatting, then he or she was required to create a new dynamically generated

21   JavaScript library that contained the new functions and the content to perform the desired formatting.

22   Thus, developers were required to create a new dynamically generated JavaScript library for each

23   different format they may desire, even if it was passing the same content.

24   50.   Having to develop multiple JavaScript libraries led to several problems. First, it was

25   time consuming to design and create each of the dynamically generated JavaScript libraries. Second,

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1 each dynamically generated JavaScript library had to be able to interface with the various backend

2 systems that provide the data, leading to an increase in network traffic and use of bandwidth on the

3 backend systems. And third, as the number of versions of the dynamically generated JavaScript

4 libraries increased, due to either variations of the content or the formatting, the burden of

5 maintaining, storing, finding, and constantly updating those libraries increased as well.

6   51.   The inventors of the '414 patent addressed these problems by separating the dynamic

7 data from the formatting functions. The inventors realized that if they generated the dynamic data

8 as a set of JavaScript objects without any HTML formatting, they could pass the data as a parameter

9 to a set of JavaScript functions which provide the formatting. This allowed for a more efficient

10 approach for serving dynamic content because the one set of JavaScript objects can be formatted by

11 different sets of JavaScript functions based on the type of formatting required. Conversely, one set

12 of JavaScript functions can format different sets of JavaScript objects depending on the type of

13 content that is to be served.

14   52.   The invention of the '414 patent had several advantages. The JavaScript functions

15 could be static, rather than dynamic, because they were taking, as input, the dynamic JavaScript data.

16 The JavaScript data and the functions could also be stored on different servers since they were no

17 longer tied together. Furthermore, the JavaScript functions and the JavaScript data can be updated

18 independent of each other; thus, if there is a change in the content of the data, the new approach

19 would not require updating the set of JavaScript functions. Additionally, a new set of JavaScript

20 functions did not need to be created for each content type and format type; rather, a single set of

21 JavaScript functions could be developed to provide the desired format for all types of dynamic

22 JavaScript content. Thus, if a developer wants different formatting, the developer only needs to

23 create one new set of JavaScript functions, as opposed to developing several JavaScript libraries to

24 format each set of content that may be served. Lastly, this would also lead to a reduction in the

25 amount of database space needed to store the content and the functions, as each combination of

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content and formatting need not be stored as a unique JavaScript library. By separating the dynamic JavaScript data from the functions that format that data, the inventors of the '414 patent greatly increased web developers' degree of formatting flexibility.

53.   In order to implement this invention, the inventors of the '414 patent developed a particular approach and corresponding software framework that combined three key features.[7]

54.   First, the '414 patent teaches "a set of JavaScript functions distinct from a set of JavaScript objects." By decoupling the content (e.g., the JavaScript objects) from the formatting (e.g., the JavaScript functions), the '414 patent resolves the problem in prior uses of JavaScript requiring the development of JavaScript libraries to account for each combination of formatting and content. Specifically, the web developer need only create sets of JavaScript objects and separate sets of JavaScript functions wherein each set of JavaScript functions can format one or more sets of JavaScript objects, such that returning one set of JavaScript functions to format one set of JavaScript objects can sufficiently output formatted content. In addition, decoupling the JavaScript functions from the JavaScript objects also supports downloading the dynamically generated set of JavaScript objects from one server while the set of JavaScript functions used for formatting can be downloaded from a different server, thereby improving performance and flexibility.

55.   Second, the '414 patent requires requesting this decoupled set of JavaScript functions and set of JavaScript objects in a single HTTP request. By requesting the JavaScript functions and the set of JavaScript objects using a single HTTP request, the invention of the '414 patent ensures that the use of decoupled JavaScript objects and functions still allows for an optimal user experience during navigation of the website. In particular, after a user submits a request on a website, such as a search request, the user expects to receive displayed formatted content responsive to the user's request. The invention of the '414 patent seeks to meet such expectations by requiring that the

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[7] For additional discussion regarding the problems of generating dynamic web content prior to the '414 patent, solutions to this problem, and inventive aspects related to the '414 patent, see Ex. 14 (Declaration of Doug Schmidt).

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1 request for both the set of JavaScript functions and the set of JavaScript objects is instantiated by a

2 single HTTP request. For example, when a user submits a search query, the HTTP request generated

3 by the user's action would be for the fully rendered page responsive to the search query, including

4 all components (such as JavaScript functions and JavaScript objects) needed for rendering the page.

5   56.   Third, the '414 patent requires that JavaScript Objects and the JavaScript functions

6 be obtained specifically in response to the request to the server. This limitation minimizes the

7 latency that a user may experience as it navigates the webpage by minimizing the number of

8 downloads and HTTP communications that occur, thus further optimizing user experience. This

9 limitation also ensures accuracy by sending JavaScript functions and objects responsive specifically

10 to the user's request.

11 **H.   IBM Invented Integrating Metadata From Applications Used For Social Networking**

12   **Into A Customer Relationship Management (CRM) System.**

13   57.   The inventors of the '168 patent developed an improved customer relationship

14 management (CRM) database system that integrated metadata from social media websites in order

15 to inform and anticipate potential client connections. A CRM system is a database system utilized

16 across an enterprise to gather, organize, automate, and synchronize sales information, in order to

17 better serve current customers and to target potential customers. Before traditional CRM systems

18 emerged, companies would store customer and sales data first in traditional accounting ledgers, and

19 later in a rolodex filing system. While these systems were sufficient for storing basic customer

20 information, as customer lists grew, these hardcopy rolodex systems were inadequate because they

21 would quickly run out of space, and required manual updating by the user.

22   58.   The emergence of the computer-based CRM system improved upon many of the

23 problems of hardcopy systems like the rolodex. Using these CRM systems, it was easier to update

24 entries, and the entries were not limited by the amount of information that could fit on a rolodex

25 index card.   But the conventional computer-implemented CRM systems had numerous

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shortcomings. These systems were limited in a similar manner as the rolodex in that they were simple databases which merely acted as containers for sales or other customer data that was entered by users of the CRM system. The inflexible structure of these databases systems failed to scale properly as the amount of data stored in the database exceeded a threshold, and the user was required to manually input changes in the customer or sales data. Additionally, the usefulness of these early databases was limited by the institutional knowledge of its users. The traditional CRM systems contained a rigid and contained set of data entry fields, and therefore often did not cover the full set of knowledge about clients and leads known by a salesperson, if said data did not fit neatly into one of the set categories. In these situations, when a particular user or salesperson left the enterprise, this personalized knowledge of their customers and leads would leave with them.

59.   As commerce began to move online and as the popularity and prevalence of social networking applications grew, the amount of customer information potentially available to users of CRM systems rose exponentially. New challenges arose in order to collect all of the relevant customer data, which was stored across a variety of sources, and would need to be dynamically updated in the CRM system (since the source data changed on a regular basis). And with social networking, businesses could retrieve detailed information about the interests of potential customers, instead of just customers that the salesperson had interacted with already. A user's profile on a social networking application contained valuable insights into the user's thoughts and interests, as well as the thoughts and interests of that user's connections. It was no longer sufficient to simply replicate a physical rolodex on a computer. The rise of new computer-centric problems required computer-centric solutions.

60.   In order to take advantage of the insights available through social media, some enterprises began scraping social networking data from social media applications for their CRM systems. Web scraping is the act of extracting large amounts of data from websites or applications. These CRM systems used web-scraping techniques to extract information on customers and potential

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leads from social media websites, and to store and track this information within the same CRM database as their own customer information. But the process of web scraping social media applications for CRM systems had several downsides. Web scraping is an arduous, resource-intensive task. And because the scraped data from the social networking applications is data in the format that it is presented on the social media application itself, instead of the social media metadata and back-end information, the extracted data was still quite inflexible and rigid, which led to the same problems with this data as with the traditionally stored CRM data. Particularly for enterprises that built large CRM systems of their own, the data structures were often not flexible enough to incorporate this social media data in a meaningful way.

61.   IBM was one of the early entities to develop its own customized CRM system, and incorporate data from social media platforms. To do so, IBM started with the SugarCRM program, an open-source CRM system. IBM then added its own customized programming in order to eventually create the IBM Sales Connect CRM system.[8] IBM's work led to the creation of a unique and unconventional CRM system used internally at IBM, including new features not present in the traditional open-source SugarCRM system or in initial versions of the IBM Sales Connect CRM system. One of the problems that the IBM team set out to solve was how to best utilize the plurality of social networking information available online to improve the CRM system. In order to do so, IBM integrated its enterprise social media platform (IBM Connections) with its customized SugarCRM system, which "enable[d] the sales teams to collaborate on complex deals and identify critical expertise to help move the opportunity forward to closure."[9] The system also integrated other features to facilitate collaboration: "Instant messaging, Twitter feeds, and the ability for sales to hashtag items in ways that are meaningful to them provide additional realtime collaborative

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[8] *See* Ex. 15 (https://files.sugarcrm.com/resources/analyst-reports/ibm-ovum-reports-2015-07-23.pdf) for more information on the IBM Sales Connect CRM.
[9] *Id.* at 4.

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1 features."[10]

2   62.   The inventors of the '168 patent include several members of the team working on

3 improving the IBM Sales Connect CRM system. The inventors realized that there was a need to not

4 only scrape data from a social media application and incorporate it into the CRM database, but to

5 also extract specific types of metadata from those social media platforms. Examples of metadata

6 include social graphs, relationships, and structures of the social media applications. The system

7 would then utilize this metadata to directly populate the CRM with leads, connections, and other

8 customer data.

9   63.   There are several inventive aspects claimed by the '168 patent. First, the patented

10 system of the '168 patent would extract metadata from various social media applications, and then

11 analyze the metadata itself in order to infer customer and sales-related information for the CRM,

12 such as opportunities and leads, relationships for mapping clients, structures, and identification of

13 subject matter experts. The generation of this social media metadata, such as a social graph, gave a

14 computer-specific advantage to salespersons utilizing these CRMs to learn about customers. Social

15 media applications contain metadata that allows the system to map a user's full social network,

16 individual connections, the preferences of the user and their connections, and how these have

17 changed over time. While some prior art systems were able to scrape social networking data from

18 social media applications, as mentioned above, this process would only allow the system to extract

19 the data presented on the social media webpage itself, and not the metadata stored within the social

20 media application that provides valuable insights into the context of and connections between

21 different users.

22   64.   Additionally, in the system of the '168 patent, the metadata utilized by the CRM

23 system is derived from social media data related to interactions between users of the social

24 applications, and historical patterns across these applications. Similar to the metadata generated by

25

[10] *Id.*

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the system (such as social graphs), the ability to extract historical interaction data from social media applications provided salespersons with the ability to gain insight into the social history of a user, and how their connections and preferences changed over time. In the human world, there is no analogous store of social data, because human interactions in the real world are ephemeral. By contrast, online social media applications provide a permanent record of these social interactions. Extraction, derivation, and analysis of this metadata by the CRM system provided a distinct advantage to salespersons in understanding a customer's needs and motivations.

65.   The claims of the '168 patent also recite an ordered combination of elements that is innovative, and describes a novel form of computer system using back-end data from social media applications to add dynamic insights to traditional "dumb" CRM systems. While traditional CRM systems only utilized information manually inputted by the user, later CRM systems with social integrations relied on scraping of front-end data from social media applications, which as described above, lacked many of the insights of the social media metadata and back-end data. But by leveraging numerous fields of metadata, the inventors of the '168 patent invented a "smart" CRM with the ability to provide dynamic insights about current and future customers by leveraging this social media metadata.

I.   Zillow Has Built Its Business By Infringing IBM's Patents.

66.   Zillow Group and its subsidiaries have grown rapidly over the last several years and now have over two billion dollars of annual revenue.

67.   Zillow appropriated the inventions of the Patents-in-Suit to grow its business. Zillow's websites (including at least www.zillow.com) and mobile applications (including at least the iOS and Android Zillow Real Estate & Rentals, Zillow Rentals, and Zillow Premier Agent applications) use the technology claimed by the Patents-in-Suit to provide customers with access to real estate listings, provide Zillow's Business-to-Business services, provide advertisements and other services to real estate agents (including at least Promoted Communities and Premier Agent),

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1 and buy, service, advertise, and provide properties through Zillow Offers.

2 68. Zillow refuses to negotiate a license agreement to end its unauthorized use of IBM's

3 intellectual property. Instead, Zillow has adopted a policy of willful blindness and has informed

4 IBM that it will not "acknowledge or respond" to evidence of infringement.

5 69. On August 26, 2019, IBM informed Zillow that IBM was investigating whether

6 Zillow infringed the '234 patent. Zillow did not acknowledge or respond to notice of the '234 patent.

7 70. On November 25, 2019, IBM informed Zillow that it infringed the '193 patent, the

8 '676 patent, and the '414 patent. IBM also informed Zillow that IBM had confirmed that Zillow

9 infringed the '234 patent. IBM attached claim charts providing detailed evidence of Zillow's

10 infringement of those patents. Copies of the claim charts are attached hereto as Exhibits 3, 5, 7,

11 and 9.

12 71. On November 27, 2019, Zillow responded to the notice of its infringement by stating

13 that IBM's letter was "a distraction from Zillow's defense of the lawsuit that IBM has filed." Zillow

14 told IBM that "[g]oing forward, Zillow will not acknowledge the receipt of further unsolicited charts,

15 or otherwise respond to claims of infringement by IBM that are not presented in a well-pleaded

16 complaint."

17 72. On December 2, 2019, IBM reminded Zillow that "Zillow cannot avoid the

18 consequences of its conduct by remaining willfully blind to evidence of infringement." IBM then

19 urged Zillow to reconsider its position: "We hope that Zillow will reconsider its policy of refusing

20 to acknowledge or otherwise respond to evidence of infringement."

21 73. Zillow did not acknowledge or respond to IBM's December 2, 2019 email.

22 74. On December 12, 2019, IBM informed Zillow that it infringed the '168 patent. IBM

23 attached a claim chart providing detailed evidence of infringement of that patent. A copy of the

24 claim chart is attached hereto as Exhibit 11.

25 75. Zillow did not acknowledge or respond to IBM's December 12, 2019 email.

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1   76.   Zillow has no justification for refusing to engage with IBM. In fact, Zillow has not

2 even attempted to justify its unauthorized use of IBM's patented inventions.

3   77.   Zillow's policy of refusing to acknowledge or respond to notice of infringement

4 constitutes willful infringement.

5 <div align="center">**COUNT ONE**</div>

6 <div align="center">**INFRINGEMENT OF THE '193 PATENT**</div>

7   78.   IBM incorporates by reference paragraphs 1-77.

8   79.   IBM is the owner of all right, title, and interest in the '193 patent. The '193 patent

9 was duly and properly issued by the USPTO on August 17, 2004. The '193 patent was duly assigned

10 to IBM. A copy of the '193 patent is attached hereto as Exhibit 2.

11   80.   In violation of 35 U.S.C. § 271(a), Zillow has directly infringed one or more of the

12 claims of the '193 patent by having made, designed, offered for sale, sold, provided, used,

13 maintained, and/or supported its websites (including www.zillow.com) and its mobile applications

14 (including the Zillow applications for mobile devices running on, for example, the Apple iOS and

15 Google Android operating systems). Alternatively, Zillow has contributed to the infringement of

16 one or more of the claims of the '193 patent in violation of 35 U.S.C. § 271(c) by selling, offering

17 to sell, and/or supplying components, materials, or apparatuses for use in practicing the patented

18 methods of the '193 patent by end users and consumers, as described below. Alternatively, Zillow

19 has induced others, including end users and customers, to infringe one or more of the claims of the

20 '193 patent in violation of 35 U.S.C. § 271(b), as described below. Zillow's infringement is

21 continuing.

22   81.   For example, as shown in Exhibit 3, Zillow directly infringes at least claim 1 of the

23 '193 patent through www.zillow.com and the Zillow mobile applications at least by:

24   a.   Providing a graphical user interface (such as the Zillow GUI) for a customer self

25   service system (such as the Zillow website) that performs resource search and

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1   selection (such as allowing users to select and search for homes) comprising:

2   b. a first visual workspace (such as the initial Zillow search/query screen)

3   comprising entry field enabling entry of a query for a resource (such as the query

4   fields on the initial Zillow search/query screen) and, one or more selectable

5   graphical user context elements (such as the search options in the Zillow

6   search/query screen), each element representing a context associated with the

7   current user state and having context attributes and attribute values (such as the

8   values associated with the aforementioned context attributes) associated

9   therewith;

10   c. a second visual workspace for visualizing (such as the Zillow search results page)

11   the set of resources that the customer self service system has determined to match

12   the user's query (such as each search result displayed on the search results page),

13   said system indicating a degree of fit of said determined resources with said query

14   (such as the sort order of the search results displayed on the search results page,

15   said sort order indicating the degree of fit of each listing with the query entered

16   by a specific user);

17   d. a third visual workspace (such as the Zillow search results map) for enabling said

18   user to select and modify context attribute values to enable increased specificity

19   and accuracy of a query's search parameters (such as by zooming in or out on the

20   map), said visual workspace further enabling said user to specify resource

21   selection parameters and relevant resource evaluation criteria (such as the

22   geographic boundaries of a search) utilized by a search mechanism in said system

23   (such as the Zillow search system), said degree of fit indication based on said

24   user's context, and said associated resource selection parameters and relevant

25   resource evaluation criteria (such as the sort order of the search results displayed

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on the search results page); and,

    e.   a mechanism enabling said user to navigate among said first, second and third visual workspaces to thereby identify and improve selection logic and response sets fitted to said query (such as the user's cursor on the Zillow GUI).

82.   Zillow performs the "said system indicating a degree of fit of said determined resources with said query" step by ordering the home listings in the search results page according to the degree of fit of each home listing with the query submitted by the user. For example, the query submitted by the user includes the search criteria inputted by the user as well as information from the user profile created by Zillow for that specific user. Zillow utilizes the search criteria inputted by the user to update the user's profile,[11] and then sets and/or alters the sort order of the search results based on the predicted match between the user's query and each specific home listing in the search results.[12] In this manner, Zillow ensures that home listings that are more relevant to the user's query rank higher in the sort order. Therefore, the sort order of the home listings on Zillow's search results page indicates a degree of fit.

83.   Zillow has had knowledge of the '193 patent and its alleged direct and indirect infringement since November 25, 2019, based on communications with IBM.

84.   Zillow also indirectly infringes one or more claims of the '193 patent through its websites (including www.zillow.com) and the Zillow mobile applications (including the Zillow applications for mobile devices running on, for example, the Apple iOS and Google Android operating systems). On information and belief, in certain circumstances, client devices and software (e.g., devices and software used by end users and customers of Zillow's website and the associated mobile application) directly infringe the '193 patent through the use of the website and mobile

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[11] Ex. 16 (https://www.zillowgroup.com/zg-privacy-policy/).
[12] Ex. 17 (https://www.zillow.com/tech/personalized-location-preference/); Ex. 18 (https://www.zillow.com/tech/personalized-recommendation-diversity/); Ex. 19 (https://www.zillow.com/tech/utilizing-both-explicit-implicit-signals/).

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1 applications.

2   85.   On information and belief, despite knowledge of the infringement of the '193 patent,

3 Zillow intended and continues to intend to contribute to patent infringement by third parties by

4 selling, offering to sell, and/or supplying components, materials, or apparatuses for use in practicing

5 the patented methods of the '193 patent by end users and consumers, as described in this section.

6   86.   For example, Zillow provides computer code (such as HTML, JavaScript, JSON, and

7 image files) underlying the Zillow website and mobile applications that are sent to customers and

8 end users for use in infringing the '193 patent, and such computer code does not have substantial

9 non-infringing uses. Such computer code is especially made and/or especially adopted for use in

10 infringing the '193 patent and is not a staple article or commodity of commerce suitable for

11 substantial non-infringing use. The only substantial use of such computer code is for the claimed

12 subject matter involving a search GUI comprising the visual workspaces claimed by the '193 patent.

13   87.   Further, as part of providing said computer code, Zillow enters into binding contracts

14 with end users and customers to use Zillow's website and mobile applications, including in an

15 infringing manner, including by binding the users to a terms of service governing access to and use

16 of the accused website and mobile applications.

17   88.   Zillow receives valuable consideration from customers and end users located in this

18 judicial district, including information provided by customers and end users, information

19 automatically collected from customers and end users, and monetary consideration from customers

20 and end users who contact real estate agents and homeowners through Zillow's website and mobile

21 applications. When customers and end users in this judicial district used the accused website and/or

22 mobile applications, Zillow collects information about the customers and end users, their devices,

23 and their interaction with the accused website and the associated mobile applications. Zillow works

24 with service providers and advertising networks to track and manage cookie information and

25 activities of customers and end users across different websites and devices. Third parties use cookie

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1 information collected by Zillow to deliver advertisements to end users and customers based on their

2 use of the accused website and mobile applications. Zillow's business is funded through advertising.

3 The applications and website are especially made and/or especially adapted for use in infringing the

4 Patents-In-Suit, at least as detailed in the individual Counts herein, and are not a staple article or

5 commodity of commerce suitable for substantial non-infringing uses because, among other things,

6 the components sent to users are uniquely designed only to access the infringing aspects of Zillow's

7 website and mobile applications.

8   89.   On information and belief, despite its knowledge of the infringement of the '193

9 patent, Zillow has intended and continues to intend to induce patent infringement by third parties,

10 including at least the direct infringement by end users and customers, as described in this section.

11 Zillow has and continues to encourage and instruct customers and end users to use Zillow's website

12 and the associated mobile applications in a manner that infringes the '193 patent by advertising the

13 website and mobile applications, providing customer support, and designing its website and mobile

14 applications in such a way that the use of the website and mobile applications by an end user or

15 customer infringes the '193 patent.

16   90.   On information and belief, to the extent Zillow was not aware that it was encouraging

17 its customers and end users to infringe the '193 patent, its lack of knowledge was based on being

18 willfully blind to the possibility that its acts would cause infringement.

19   91.   IBM has been damaged by the infringement of the '193 patent by Zillow. IBM is

20 entitled to recover from Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

21   92.   The infringement by Zillow of the '193 patent was deliberate and willful, entitling

22 IBM to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in

23 prosecuting this action under 35 U.S.C. § 285.

24   93.   IBM has suffered and continues to suffer irreparable harm, for which there is no

25 adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court.

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1 **COUNT TWO**

2 **INFRINGEMENT OF THE '676 PATENT**

3   94.   IBM incorporates by reference paragraphs 1-93.

4   95.   IBM is the owner of all right, title, and interest in the '676 patent. The '676 patent

5 was duly and properly issued by the USPTO on August 31, 2004. The '676 patent was duly assigned

6 to IBM. A copy of the '676 patent is attached hereto as Exhibit 4.

7   96.   In violation of 35 U.S.C. § 271(a), Zillow has directly infringed one or more of the

8 claims of the '676 patent by having made, designed, offered for sale, sold, provided, used,

9 maintained, and/or supported its websites (including www.zillow.com) and its mobile applications

10 (including the Zillow applications for mobile devices running on, for example, the Apple iOS and

11 Google Android operating systems). Alternatively, Zillow has contributed to the infringement of

12 the claims of the '676 patent in violation of 35 U.S.C. § 271(c) by selling, offering to sell, and/or

13 supplying components, materials, or apparatuses for use in practicing the patented methods of the

14 '676 patent by end users and consumers, as described in this section. Alternatively, Zillow has

15 induced others, including end users and customers, to infringe one or more of the claims of the '676

16 patent in violation of 35 U.S.C. § 271(b), as described below. Zillow's infringement is continuing.

17   97.   For example, as shown in Exhibit 5, Zillow directly infringes at least claim 14 of the

18 '676 patent through www.zillow.com and the Zillow mobile applications at least by:

19   f.   receiving a resource response set of results (such as search result listings for the

20   similar home carousel on each home details page) obtained in response to a

21   current user query (such as a search for home listings submitted by a user when a

22   user enters an address or selects a listing);

23   g.   receiving a user context vector (such as a set of data associated with a specific

24   user) associated with said current user query (such as the user's current search on

25   Zillow's website or mobile application), said user context vector comprising data

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associating an interaction state with said user (such as a short-term history set of

a user) and including context that is a function of the user (such as data classifying

the user);

h. applying an ordering and annotation function for mapping the user context vector

with the resource response set (such as Zillow's algorithm for ranking home

listings) to generate an annotated response set having one or more annotations

(such as a JSON array comprising the ordered set of listings to be included in the

search results, like the similar home carousel); and,

i. controlling the presentation of the resource response set to the user according to

said annotations (such as presenting search results, like the similar home carousel

on the Zillow website or mobile applications), wherein the ordering and

annotation function is executed interactively at the time of each user query (such

as Zillow executing an algorithm for ranking home listings presented in the search

results, like the similar home carousel, whenever it receives a request from a user

entering an address or selecting a listing).

98.   Zillow tracks how users use its website and mobile applications and collects
information about users and their devices.[13] Along with the information that users give to Zillow,
Zillow collects a variety of information automatically as users use www.zillow.com and its mobile
applications. For example, Zillow collects the location of users' devices. For another example,
Zillow collects information about how users use its website and mobile applications, which include
a user's home search history, purchase activity, what users click on, the homes users view, and the
amount of time users spend looking at different parts of the Zillow website. When Zillow gathers

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[13] *See* Ex. 16 (https://www.zillowgroup.com/zg-privacy-policy/); Ex. 20
(https://privacy.zillowgroup.com/); Ex. 21 (https://zillow.zendesk.com/hc/en-
us/articles/360040824214-How-does-Zillow-Group-use-the-data-we-collect-); Ex. 22
(https://zillow.zendesk.com/hc/en-us/articles/360040824194-What-information-does-Zillow-
Group-collect-).

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1   information about how a user views and uses Zillow's content, Zillow connects that user's activity

2   with other data that Zillow stores about the user. Zillow uses the data it collects to understand and

3   infer a user's preferences.

4   99.   Zillow performs the "controlling the presentation of the resources response set to the

5   user according to said annotations, wherein the ordering and annotation function is executed

6   interactively at the time of each user query" step when it executes an algorithm for ranking home

7   listing presented in the search results, like the similar home carousel, whenever it receives a request

8   from a user entering an address or selecting a listing. Zillow creates a user profile of each consumer

9   to capture their personalized interests in homes. Within the user profile, user preferences are inferred

10   from latent information implicitly expressed through users' activities, such as clicks and saves. The

11   user profile is continually updated based on the user's activity, such as the user's last click or query.

12   Zillow uses these user profiles to "power recommendations."[14] Whenever a user submits a query,

13   Zillow personalizes the experience for each user on its website and mobile applications. Zillow

14   shows advertising, content, or features based on what Zillow thinks a user might like. For example,

15   Zillow uses the information it collects from users to return search results.[15] Zillow customizes search

16   results based on the information that it collects about users and their activities.[16]

17   100.   Zillow has had knowledge of the '676 patent and its alleged direct and indirect

18   infringement since November 25, 2019, based on communications with IBM.

19   101.   Zillow also indirectly infringes one or more claims of the '676 patent through its

20   websites (including www.zillow.com) and its mobile applications (including the Zillow applications

21   for mobile devices running on, for example, the Apple iOS and Google Android operating systems).

22   On information and belief, in certain circumstances, client devices and software (e.g., devices and

23   software used by end users and customers of Zillow's website and the associated mobile

24   _____

[14] *See* Ex. 19 (https://www.zillow.com/tech/utilizing-both-explicit-implicit-signals/).
25   [15] *See* Ex. 16 (https://www.zillowgroup.com/zg-privacy-policy/).
[16] *See* Ex. 19 (https://www.zillow.com/tech/utilizing-both-explicit-implicit-signals/).

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1   applications) directly infringe the '676 patent through the use of the website and mobile applications.

2   In particular, to the extent Zillow does not perform the method steps, in certain circumstances, client

3   devices and software (e.g., devices and software used by end users, customers, and potential

4   customers of Zillow's website and the associate mobile applications) perform at least the method of

5   annotating resource results recited by claim 14 of the '676 patent.

6   102.   On information and belief, despite knowledge of the infringement of the '676 patent,

7   Zillow has intended and continues to intend to contribute to patent infringement by third parties by

8   selling, offering to sell, and/or supplying components, materials, or apparatuses for use in practicing

9   the patented methods of the '676 patent by end users and consumers, as described in this section.

10   103.   For example, Zillow provides computer code (such as HTML, JavaScript, and image

11 files) underlying the Zillow website and mobile applications to customers and end users for use in

12 infringing the '676 patent, and such computer code does not have substantial non-infringing uses.

13 Such computer code is especially made and/or especially adapted for use in infringing the '676 patent

14 and is not a staple article or commodity of commerce suitable for substantial non-infringing use.

15 The only substantial use of Zillow's computer code responses is for the claimed subject matter

16 involving annotating resource results obtained in a customer self-service system that performs

17 resource search and selection as described in the '676 patent.

18   104.   Further, as a part of providing said computer code, Zillow enters into binding

19 contracts with end users and customers to use Zillow's website and mobile applications, including

20 in an infringing manner, including by binding the users to a terms of service governing access to and

21 use of the accused website and mobile applications.

22   105.   Zillow receives valuable consideration from customers and end users located in this

23 judicial district, including information provided by customers and end users, information

24 automatically collected from customers and end users, and monetary consideration from customers

25 and end users who contact real estate agents and homeowners through Zillow's website and mobile

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applications. When customers and end users in this judicial district use the accused website and/or mobile applications, Zillow collects information about the customers and end users, their devices, and their interaction with the accused website and the associated mobile applications. Zillow works with service providers and advertising networks to track and manage cookie information and activities of customers and end users across different websites and devices. Third parties use cookie information collected by Zillow to deliver advertisements to end users and customers based on their use of the accused website and mobile applications. Zillow's business is funded through advertising. The applications and website are especially made and/or especially adapted for use in infringing the Patents-In-Suit, at least as detailed above, and are not a staple article or commodity of commerce suitable for substantial non-infringing uses because, among other things, the components sent to users are uniquely designed only to access the infringing aspects of Zillow's website and mobile applications.

106.   On information and belief, despite its knowledge of the infringement of the '676 patent, Zillow has intended and continues to intend to induce patent infringement by third parties, including at least the direct infringement by end users and customers, as described in this section. Zillow has and continues to encourage and instruct customers and end users to use Zillow's website and the associated mobile applications in a manner that infringes the '676 patent by advertising the website and mobile applications, providing customer support, and designing its website and mobile applications in such a way that the use of the website and mobile applications by an end user or customer infringes the '676 patent.

107.   On information and belief, to the extent Zillow was not aware that it was encouraging its customers and end users to infringe the '676 patent, its lack of knowledge was based on being willfully blind to the possibility that its acts would cause infringement.

108.   IBM has been damaged by the infringement of the '676 patent by Zillow. IBM is entitled to recover from Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

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1   109.   The infringement by Zillow of the '676 patent was deliberate and willful, entitling

2   IBM to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in

3   prosecuting this action under 35 U.S.C. § 285.

4   110.   IBM has suffered and continues to suffer irreparable harm, for which there is no

5   adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court.

6   ## COUNT THREE

7   ## INFRINGEMENT OF THE '234 PATENT

8   111.   IBM incorporates by reference paragraphs 1-110.

9   112.   IBM is the owner of all right, title, and interest in the '234 patent. The '234 patent

10 was duly and properly issued by the USPTO on June 2, 2009. The '234 patent was duly assigned to

11 IBM. A copy of the '234 patent is attached hereto as Exhibit 6.

12 113.   In violation of 35 U.S.C. § 271(a), Zillow has directly infringed one or more of the

13 claims of the '234 patent by having made, designed, offered for sale, sold, provided, used,

14 maintained, and/or supported its websites (including www.zillow.com) and its mobile applications

15 (including the Zillow applications for mobile devices running on, for example, the Apple iOS and

16 Google Android operating systems). Zillow's infringement is continuing.

17 114.   For example, as shown in Exhibit 7, Zillow directly infringes at least claim 1 of the

18 '234 patent through www.zillow.com and the Zillow mobile applications at least by:

19   a.   generating a portal page (such as the Zillow search results page), wherein the

20   portal page includes a plurality of portlets (such as each home listing on the search

21   results page), the method comprising:

22   b.   determining whether a subset of portlets is stackable (such as organizing the home

23   listings based on commonalities, such as content type); and,

24   c.   responsive to the subset of portlets being stackable, identifying two or more stacks

25   of portlets that are stackable (such as the various pages and/or sets of home

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listings available on the search results page, such as price (low to high), homes for you, price (high to low), newest, bedrooms, bathrooms, square feet, lot size, Zestimate (high to low), or Zestimate (low to high)), and

d. generating the portal page (such as the Zillow search results page) such that the two or more stacks of portlets are generated as a stack of stacks, wherein the stack of stacks presents a first stack of portlets (such as the page or the set of home listings initially presented to the user, which the user may navigate through by moving the scroll bar to view home listings further down in the page, or by selecting the numbered buttons ("1," "2," "3," etc.) to view subsequent pages of home listings in the set) and a control for selecting a second stack of portlets from within the two or more stacks of portlets that is not currently presented (such as the "Sort by" drop down menu that allows the user to select other stacks of home listings not currently presented, such as price (low to high), homes for you, price (high to low), newest, bedrooms, bathrooms, square feet, lot size, Zestimate (high to low), or Zestimate (low to high)).

115. Zillow performs the "generating the portal page . . . wherein the stack of stacks presents a first stack of portlets" step by generating a page or a set of home listings to present to the user in the list section of the search results portal page. For example, Zillow generates a page of 40 home listings that are combined into one stack. Four to six home listings are presented at the top of the stack, and the user may select the scroll bar at the right of the portal page to navigate through the rest of the home listings in the stack. As a second example, Zillow generates a set of several pages of home listings that are combined into one stack. The user may select the numbered buttons ("1," "2," "3," etc.) at the bottom of the portal page to navigate through the subsequent pages of home listings in the stack.

116. Zillow has had knowledge of the '234 patent and its alleged direct and indirect

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1   infringement since August 26, 2019, based on communications with IBM.

2   117.   IBM has been damaged by the infringement of the '234 patent by Zillow. IBM is

3   entitled to recover from Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

4   118.   The infringement by Zillow of the '234 patent was deliberate and willful, entitling

5   IBM to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in

6   prosecuting this action under 35 U.S.C. § 285.

7   119.   IBM has suffered and continues to suffer irreparable harm, for which there is no

8   adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court.

9   **COUNT FOUR**

10   **INFRINGEMENT OF THE '414 PATENT**

11   120.   IBM incorporates by reference paragraphs 1-119.

12   121.   IBM is the owner of all right, title, and interest in the '414 patent. The '414 patent

13   was duly and properly issued by the USPTO on February 14, 2017. The '414 patent was duly

14   assigned to IBM. A copy of the '414 patent is attached hereto as Exhibit 8.

15   122.   In violation of 35 U.S.C. § 271(a), Zillow has directly infringed one or more of the

16   claims of the '414 patent by having made, designed, offered for sale, sold, provided, used,

17   maintained, and/or supported its websites (including www.zillow.com) and its mobile applications

18   (including the Zillow applications for mobile devices running on, for example, the Apple iOS and

19   Google Android operating systems). Alternatively, Zillow has contributed to the infringement of

20   one or more of the claims of the '414 patent in violation of 35 U.S.C. § 271(c) by selling, offering

21   to sell, and/or supplying components, materials, or apparatuses for use in practicing the patented

22   methods of the '414 patent by end users and consumers, as described below. Alternatively, Zillow

23   has induced others, including end users and customers, to infringe one or more of the claims of the

24   '414 patent in violation of 35 U.S.C. § 271(b), as described below. Zillow's infringement is

25   continuing.

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123.   For example, as shown in Exhibit 9, Zillow directly infringes at least claim 1 of the '414 patent through www.zillow.com and the Zillow mobile applications at least by:

   a.   requesting (such as with code included by Zillow on its website and mobile applications that generate and send to Zillow's servers an HTTP request in response to a user action and/or by, on information and belief, forwarding the request, by the Zillow server receiving a request, to another Zillow server to satisfy the request) a set of JavaScript objects (such as the JSON representing property search results) and a set of JavaScript functions (such as the JavaScript functions like those from s.zillowstatic.com) in a single Hypertext Transfer Protocol (HTTP) request (such as a single HTTP request for obtaining a rendered webpage):

   b.   in response to the requesting: obtaining the set of JavaScript objects (such as obtaining the JSON representing property search results) that represents dynamic JavaScript data (such as the price and statusType for each property responsive to the property search);

   c.   obtaining the set of JavaScript functions (such as obtaining the JavaScript functions like those from s.zillowstatic.com) to format the set of JavaScript objects, the set of JavaScript objects being distinct from the set of JavaScript functions (the JavaScript objects represented by the JSON is distinct from the JavaScript functions like those from s.zillowstatic.com); and

   d.   formatting the set of JavaScript objects using the set of JavaScript functions as a parameter (such as formatting the objects in the JSON using the JavaScript functions like those from s.zillowstatic.com); and

   e.   outputting at least a subset of the set of JavaScript objects in a format determined by the set of JavaScript functions (such as the HTML that displays the property

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search results page).

124.   Zillow performs the "requesting" step by causing code on its website and mobile applications to be executed that generate and send to Zillow's servers an HTTP request in response to a user action. For example, Zillow performs the "requesting" step on its website by causing JavaScript code to be executed that generates an HTTP request when a user submits a search query. For another example, Zillow performs the "requesting" step on its mobile applications by causing code to be executed that generates an HTTP request when a user taps to view the details page of a property listing. Additionally, on information and belief, Zillow performs the "requesting" step when the Zillow server that receives the HTTP request sent from the user's browser or mobile application directs the request to a subsequent Zillow server in order to satisfy the HTTP request.

125.   Zillow's request for "a set of JavaScript objects and a set of JavaScript functions" is in a single HTTP request. The HTTP request is generated in response to a user's request for a subsequent page, such as a page containing property listings responsive to a search query or the details page of a property listing, and requests all of the components needed to render that subsequent page, including the HTML, CSS files, JavaScript files, JavaScript objects, images, etc. on that page. Zillow obtains the various components requested by returning, in response to the HTTP request, an HTML page including scripts for obtaining the other components.

126.   Alternatively, to the extent the "requesting" step is performed by a third party (in addition to and/or separate from Zillow's performance), such as a user, browser, or mobile operating system, that performance is attributable to Zillow at least because Zillow has an agency or contractual relationship with said third party, or Zillow controls or directs the performance of said third party. For example, Zillow controls or directs the performance of the "requesting" step by users, browsers, and mobile operating systems because it, for example, conditions receipt of a benefit, such as access to certain content on Zillow's website and mobile applications, on the performance of the claimed steps, and establishes the manner or timing of the performance by, for

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1   example, requesting a set of JavaScript objects and a set of JavaScript functions using its underlying

2   computer code. For another example, Zillow controls or directs the performance of the "requesting"

3   step by users, browsers, and mobile operating systems because it profits from the performance by,

4   for example, increasing the number of properties accessed on Zillow's website and mobile

5   applications. Zillow has the right to stop or limit infringement, by, for example, not sending

6   JavaScript objects or JavaScript functions to the users, browsers, or mobile operating systems.

7   127.   Alternatively, to the extent the "formatting" step is performed by a third party (in

8   addition to and/or separate from Zillow's performance), such as a user, browser, or mobile operating

9   system, that performance is attributable to Zillow at least because Zillow has an agency or

10   contractual relationship with said third party, or Zillow controls or directs the performance of said

11   third party. For example, Zillow controls or directs the performance of the "formatting" step by

12   users, browsers, and mobile operating systems because it, for example, conditions receipt of a

13   benefit, such as access to certain content on Zillow's website and mobile applications, on the

14   performance of the claimed steps, and establishes the manner or timing of the performance by, for

15   example, designing and generating the JavaScript and the JSON files, which comprise

16   www.zillow.com and the Zillow mobile applications. For another example, Zillow controls or

17   directs the performance of the "formatting" step by users, browsers, and mobile operating systems

18   because it profits from the performance by, for example, increasing use and user interactions by

19   improving the manner that properties are displayed. Zillow has the right to stop or limit

20   infringement, by, for example, redesigning the JavaScript and JSON files of www.zillow.com and

21   the Zillow mobile applications to function in a non-infringing manner.

22   128.   Alternatively, to the extent the "outputting" step is performed by a third party (in

23   addition to and/or separate from Zillow's performance), such as a user, browser, or mobile operating

24   system, that performance is attributable to Zillow at least because Zillow has an agency or

25   contractual relationship with said third party, or Zillow controls or directs the performance of said

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1   third party. For example, Zillow controls or directs the performance of the "outputting" step by

2   users, browsers, and mobile operating systems because it, for example, conditions receipt of a

3   benefit, such as access to certain content on Zillow's website and mobile applications, on the

4   performance of the claimed steps, and establishes the manner or timing of the performance by, for

5   example, designing and generating the HTML and the JavaScript files of www.zillow.com and the

6   Zillow mobile applications. For another example, Zillow controls or directs the performance of the

7   "outputting" step by users, browsers, and mobile operating systems because it profits from the

8   performance by, for example, increasing the number of properties accessed on Zillow's website and

9   mobile applications by displaying the properties in an efficient manner. Zillow has the right to stop

10   or limit infringement, by, for example, redesigning the HTML and the JavaScript files of

11   www.zillow.com and the Zillow mobile applications to function in a non-infringing manner.

12   129.   Zillow has had knowledge of the '414 patent and its alleged direct and indirect

13   infringement since November 25, 2019, based on communications with IBM.

14   130.   Zillow also indirectly infringes one or more claims of the '414 patent through its

15   websites (including www.zillow.com) and the Zillow mobile applications (including the Zillow

16   applications for mobile devices running on, for example, the Apple iOS and Google Android

17   operating systems, including at least Zillow Real Estate & Rentals, Zillow Rentals, and Zillow

18   Premier Agent applications). On information and belief, in certain circumstances, client devices and

19   software (e.g., devices and software used by end users and customers of Zillow's website and the

20   associated mobile applications) directly infringe the '414 patent through the use of the website and

21   mobile applications. In particular, to the extent Zillow does not perform the method steps, in certain

22   circumstances, client devices and software (e.g., devices and software used by end users, customers,

23   and potential customers of Zillow's website and the associated mobile applications) perform at least

24   the method of formatting and serving web content recited by claim 1 of the '414 patent.

25   131.   On information and belief, despite knowledge of the infringement of the '414 patent,

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1   Zillow intended and continues to intend to contribute to patent infringement by third parties by

2   selling, offering to sell, and/or supplying components, materials, or apparatuses for use in practicing

3   the patented methods of the '414 patent by end users and consumers, as described in this section.

4   132.   For example, Zillow provides computer code (such as HTML, JavaScript, JSON, and

5   image files) underlying the Zillow website and mobile applications that are sent to customers and

6   end users for use in infringing the '414 patent, and such computer code does not have substantial

7   non-infringing uses. Such computer code is especially made and/or especially adapted for use in

8   infringing the '414 patent and is not a staple article or commodity of commerce suitable for

9   substantial non-infringing use. The only substantial use of such computer code is for the claimed

10   subject matter involving the formatting of JavaScript objects by JavaScript functions claimed by the

11   '414 patent.

12   133.   Further, as a part of providing said computer code, Zillow enters into binding

13   contracts with end users and customers to use Zillow's website and mobile applications, including

14   in an infringing manner, including by binding the users to a terms of service governing access to and

15   use of the accused website and mobile applications.

16   134.   Zillow receives valuable consideration from customers and end users located in this

17   judicial district, including information provided by customers and end users, information

18   automatically collected from customers and end users, and monetary consideration from customers

19   and end users who contact real estate agents and homeowners through Zillow's website and mobile

20   applications. When customers and end users in this judicial district use the accused website and/or

21   mobile applications, Zillow collects information about the customers and end users, their devices,

22   and their interaction with the accused website and the associated mobile applications. Zillow works

23   with service providers and advertising networks to track and manage cookie information and

24   activities of customers and end users across different websites and devices. Third parties use cookie

25   information collected by Zillow to deliver advertisements to end users and customers based on their

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1   use of the accused website and mobile applications. Zillow's business is funded through advertising.

2   The applications and website are especially made and/or especially adapted for use in infringing the

3   Patents-In-Suit, at least as detailed in the individual Counts above, and are not a staple article or

4   commodity of commerce suitable for substantial non-infringing uses because, among other things,

5   the components sent to users are uniquely designed only to access the infringing aspects of Zillow's

6   website and mobile applications.

7   135.   On information and belief, despite its knowledge of the infringement of the '414

8   patent, Zillow has intended and continues to intend to induce patent infringement by third parties,

9   including at least the direct infringement by end users and customers, as described in this section.

10   Zillow has and continues to encourage and instruct customers and end users to use Zillow's website

11   and the associated mobile applications in a manner that infringes the '414 patent by advertising the

12   website and mobile applications, providing customer support, and designing its website and mobile

13   applications in such a way that the use of the website and mobile applications by an end user or

14   customer infringes the '414 patent.

15   136.   On information and belief, to the extent Zillow was not aware that it was encouraging

16   its customers and end users to infringe the '414 patent, its lack of knowledge was based on being

17   willfully blind to the possibility that its acts would cause infringement.

18   137.   IBM has been damaged by the infringement of the '414 patent by Zillow. IBM is

19   entitled to recover from Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

20   138.   The infringement by Zillow of the '414 patent was deliberate and willful, entitling

21   IBM to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in

22   prosecuting this action under 35 U.S.C. § 285.

23   139.   IBM has suffered and continues to suffer irreparable harm, for which there is no

24   adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court.

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1   **COUNT FIVE**

2   **INFRINGEMENT OF THE '168 PATENT**

3   140.   IBM incorporates by reference paragraphs 1-139.

4   141.   IBM is the owner of all right, title, and interest in the '168 patent. The '168 patent

5   was duly and properly issued by the USPTO on October 30, 2018. The '168 patent was duly assigned

6   to IBM. A copy of the '168 patent is attached hereto as Exhibit 10.

7   142.   In violation of 35 U.S.C. § 271(a), Zillow has directly infringed one or more of the

8   claims of the '168 patent by having made, designed, offered for sale, sold, provided, used,

9   maintained,   and/or   supported   its   websites   (including   www.zillow.com   and

10   www.premieragent.zillow.com) and its mobile applications (including the Zillow applications for

11   mobile devices running on, for example, the Apple iOS and Google Android operating systems, and

12   the Zillow Premier Agent applications for mobile devices running on, for example, the Apple iOS

13   and Google Android operating systems). Zillow's infringement is continuing.

14   143.   For example, as shown in Exhibit 11, Zillow directly infringes at least claim 1 of the

15   '168   patent   through   www.zillow.com,   www.premieragent.zillow.com,   the   Zillow   mobile

16   applications, and the Zillow Premier Agent mobile applications at least by:

17   a.   obtaining, from applications used for social networking (such as Zillow's

18   websites and mobile applications), metadata associated with users of the

19   applications (such as a set of variables corresponding to a user's clicks, saves, and

20   likes of home listing URLs, as well as the search queries inputted by users while

21   browsing on Zillow's website and mobile applications);

22   b.   analyzing the metadata from the applications (such as the set of variables

23   corresponding to a user's clicks, saves, and likes of home listing URLs, as well

24   as the search queries inputted by users while browsing on Zillow's website and

25   mobile applications) to infer opportunities (such as personalized home listings

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1   with common variables and data attributes as the variables associated with a

2   particular Zillow user, which is provided to Premier Agent users), relationships

3   for mapping clients (such as the "My Agent" relationships between Premier

4   Agents and customers, wherein each home listing selected by a user on Zillow's

5   websites and mobile applications is automatically associated with the Premier

6   Agent's profile), structures (such as the various lead types generated based upon

7   the different types of data structures used by Zillow Premier Agent to map clients

8   to Premier Agents), and subject matter experts (such as the Premier Agents);

9   c. integrating the opportunities (such as the personalized home listings with

10   common variables and data attributes as the variables associated with a particular

11   Zillow user, which is provided to Premier Agent users), the relationships for

12   mapping the clients (such as the "My Agent" relationships between Premier

13   Agents and customers, wherein each home listing selected by a user on Zillow's

14   websites and mobile applications is automatically associated with the Premier

15   Agent's profile), the structures (such as the various lead types generated based

16   upon the different types of data structures used by Zillow Premier Agent to map

17   clients to Premier Agents), and the subject matter experts (such as the Premier

18   Agents) into a customer relationship management (CRM) system (such as the

19   Premier Agent website and associated mobile applications) to populate the CRM

20   system;

21   d. identifying potential customers (such as users of Zillow's website and mobile

22   applications without an outstanding "My Agent" relationship) based on integrated

23   opportunities (such as the personalized home listings with common variables and

24   data attributes as the variables associated with a particular Zillow user, which is

25   provided to Premier Agent users), relationships for mapping the clients (such as

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the "My Agent" relationships between Premier Agents and customers, wherein each home listing selected by a user on Zillow's websites and mobile applications is automatically associated with the Premier Agent's profile), the structures (such as the various lead types generated based upon the different types of data structures used by Zillow Premier Agent to map clients to Premier Agents), and the subject matter experts (such as the Premier Agents); and

e.   managing interactions with current and target customers (such as utilizing the integrated Zillow users, leads, and "My Agent" relationships in order to generate a CRM data structure that facilitates communications with leads, and provides insights by analyzing the metadata from Zillow's websites and mobile applications) based on the integrated opportunities (such as the personalized home listings with common variables and data attributes as the variables associated with a particular Zillow user, which is provided to Premier Agent users), relationships for mapping the clients (such as the "My Agent" relationships between Premier Agents and customers, wherein each home listing selected by a user on Zillow's websites and mobile applications is automatically associated with the Premier Agent's profile), the structures (such as the various lead types generated based upon the different types of data structures used by Zillow Premier Agent to map clients to Premier Agents), and the subject matter experts (such as the Premier Agents).

144.   For another example, Zillow directly infringes claim 8 of the '168 patent through www.zillow.com, www.premieragent.zillow.com, the Zillow mobile applications, and the Premier Agent mobile applications at least by:

a.   accessing a social networking application (such as Zillow's websites and mobile applications) via a user device (such as Zillow's computers or servers);

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1   b. accessing metadata on the social networking application (such as the set of

2   variables corresponding to a user's clicks, saves, and likes of home listing URLs,

3   as well as the search queries inputted by users while browsing on Zillow's website

4   and mobile applications), wherein the metadata:

5   c. comprises:

6   d. patterns (such as user-item engagement data generated by analyzing the set of

7   variables corresponding to a user's clicks, saves, and likes of home listing URLs,

8   as well as the search queries inputted by users while browsing on Zillow's website

9   and mobile applications, in order to generate unique user profiles);

10   e. social graphs of users of the application (such as Premier Agent Teams, which

11   generate graphical hierarchies demonstrating the relationships between the

12   various Premier Agents on a team and the Zillow users linked to each agent);

13   f. relationships (such as the "My Agent" relationships between Premier Agents and

14   customers, wherein each home listing selected by a user on Zillow's websites and

15   mobile applications is automatically associated with the Premier Agent's profile);

16   g. structures of the application (such as the various lead types generated based upon

17   the different types of data structures used by Zillow Premier Agent to map clients

18   to Premier Agents); and

19   h. is derived from:

20   i. interactions between users of the application (such as the set of variables

21   corresponding to a user's clicks, saves, and likes of home listing URLs, and the

22   interactions of potential home buyers on Zillow's websites and mobile

23   applications with potential home sellers on Zillow's websites and mobile

24   applications); and

25   j. historical patterns across the application (such as historical user-item engagement

1 data generated by analyzing the set of variables corresponding to clicks, saves,

2 and likes of home listing URLs by users of Zillow's website and mobile

3 applications, as well as the search queries inputted by users while browsing on

4 Zillow's website and mobile applications);

5 k. determining from the metadata (such as the set of variables corresponding to a

6 user's clicks, saves, and likes of home listing URLs, as well as the search queries

7 inputted by users while browsing on Zillow's website and mobile applications),

8 a subset of the metadata (such as a subset of the set of variables corresponding to

9 a user's clicks, saves, and likes of home listing URLs, as well as the search queries

10 inputted by users while browsing on Zillow's website and mobile applications) to

11 infer (such as the personalized home listings with common variables and data

12 attributes as the variables associated with a particular Zillow user, which is

13 provided to Premier Agent users), relationships for mapping the clients (such as

14 the "My Agent" relationships between Premier Agents and customers, wherein

15 each home listing selected by a user on Zillow's websites and mobile applications

16 is automatically associated with the Premier Agent's profile), the structures (such

17 as the various lead types generated based upon the different types of data

18 structures used by Zillow Premier Agent to map clients to Premier Agents), and

19 the subject matter experts (such as the Premier Agents);

20 l. determining from the subset of the metadata:

21 m. when a user accesses the application (such as a user logging on to Zillow's

22 website and mobile applications);

23 n. how many other users access the application when the user accesses the

24 application (such as the total active users of Zillow's website and mobile

25 applications);

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1   o. analyzing the metadata from the applications (such as the set of variables

2   corresponding to a user's clicks, saves, and likes of home listing URLs, as well

3   as the search queries inputted by users while browsing on Zillow's website and

4   mobile applications) to infer:

5   p. complex record opportunities (such as the set of personalized home listings with

6   common variables and data attributes as the variables associated with a particular

7   Zillow user, which is provided to Premier Agent users) that include multiple fields

8   of metadata (such as the various data attributes associated with each home listing)

9   and that comprise an entity's interactions with customers (such as the set of home

10   listings associated with a particular Premier Agent),

11   q. relationships for mapping clients (such as the "My Agent" relationships between

12   Premier Agents and customers, wherein each home listing selected by a user on

13   Zillow's websites and mobile applications is automatically associated with the

14   Premier Agent's profile),

15   r. structures (such as the various lead types generated based upon the different types

16   of data structures used by Zillow Premier Agent to map clients to Premier

17   Agents), and

18   s. subject matter experts (such as the Premier Agents);

19   t. integrating the opportunities (such as the personalized home listings with

20   common variables and data attributes as the variables associated with a particular

21   Zillow user, which are provided to Premier Agent users), relationships for

22   mapping the clients (such as the "My Agent" relationships between Premier

23   Agents and customers, wherein each home listing selected by a user on Zillow's

24   websites and mobile applications is automatically associated with the Premier

25   Agent's profile), the structures (such as the various lead types generated based

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1   upon the different types of data structures used by Zillow Premier Agent to map

2   clients to Premier Agents), and the subject matter experts (such as the Premier

3   Agents) into a customer relationship management (CRM) system (such as the

4   Premier Agent website and associated mobile applications) to populate the CRM

5   system;

6   u. organizing, automating, and synchronizing sales, marketing, customer service

7   and technical support (such restructuring the services provided within the Premier

8   Agent CRM based on the leads generated using social networking metadata) for

9   an organization based on the integrated opportunities (such as the personalized

10   home listings with common variables and data attributes as the variables

11   associated with a particular Zillow user, which is provided to Premier Agent

12   users), relationships for mapping the clients (such as the "My Agent"

13   relationships between Premier Agents and customers, wherein each home listing

14   selected by a user on Zillow's websites and mobile applications is automatically

15   associated with the Premier Agent's profile), the structures (such as the various

16   lead types generated based upon the different types of data structures used by

17   Zillow Premier Agent to map clients to Premier Agents), and the subject matter

18   experts (such as the Premier Agents);

19   v. identifying potential customers (such as users of Zillow's website and mobile

20   applications without an outstanding "My Agent" relationship) based on integrated

21   opportunities (such as the personalized home listings with common variables and

22   data attributes as the variables associated with a particular Zillow user, which is

23   provided to Premier Agent users), relationships for mapping the clients (such as

24   the "My Agent" relationships between Premier Agents and customers, wherein

25   each home listing selected by a user on Zillow's websites and mobile applications

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1   is automatically associated with the Premier Agent's profile), the structures (such

2   as the various lead types generated based upon the different types of data

3   structures used by Zillow Premier Agent to map clients to Premier Agents), and

4   the subject matter experts (such as the Premier Agents); and

5   w. managing interactions with current and target customers (such as utilizing the

6   integrated Zillow users, leads, and "My Agent" relationships in order to generate

7   a CRM data structure that facilitates communications with leads, and provides

8   insights by analyzing the metadata from Zillow's websites and mobile

9   applications) based on the integrated opportunities (such as the personalized

10   home listings with common variables and data attributes as the variables

11   associated with a particular Zillow user, which is provided to Premier Agent

12   users), relationships for mapping the clients (such as the "My Agent"

13   relationships between Premier Agents and customers, wherein each home listing

14   selected by a user on Zillow's websites and mobile applications is automatically

15   associated with the Premier Agent's profile), the structures (such as the various

16   lead types generated based upon the different types of data structures used by

17   Zillow Premier Agent to map clients to Premier Agents), and the subject matter

18   experts (such as the Premier Agents).

19   145.   Alternatively, to the extent the "managing" step of claims 1 and/or 8 is performed by

20   a third party (in addition to and/or separate from Zillow's performance), such as a user, browser, or

21   mobile operating system, that performance is attributable to Zillow at least because Zillow has an

22   agency or contractual relationship with said third party, or Zillow controls or directs the performance

23   of said third party. For example, Zillow controls or directs the performance of the "managing" step

24   by users, browsers, and mobile operating systems because it, for example, conditions receipt of a

25   benefit, such as contact between a Premier Agent and a user on Zillow's website and mobile

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1   applications, on the performance of the claimed steps, and establishes the manner or timing of the

2   performance by, for example, its design of the capabilities and the user interface of the Premier

3   Agent App. For another example, Zillow controls or directs the performance of the "managing" step

4   by users, browsers, and mobile operating systems because it profits from the performance by, for

5   example, facilitating contact between Premier Agents and users on Zillow's website and mobile

6   applications. Zillow has the right to stop or limit infringement, by, for example, not enabling contact

7   between Premier Agents and users.

8   146.   Zillow has had knowledge of the '168 patent and its alleged direct and indirect

9   infringement since December 12, 2019, based on communications with IBM.

10   147.   IBM has been damaged by the infringement of the '168 patent by Zillow. IBM is

11 entitled to recover from Zillow the damages sustained by IBM as a result of Zillow's wrongful acts.

12   148.   The infringement by Zillow of the '168 patent was deliberate and willful, entitling

13 IBM to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in

14 prosecuting this action under 35 U.S.C. § 285.

15   149.   IBM has suffered and continues to suffer irreparable harm, for which there is no

16 adequate remedy at law, and will continue to do so unless Zillow is enjoined therefrom by this Court.

17   **RELIEF REQUESTED**

18   Wherefore, IBM respectfully requests that this Court enter judgment against Zillow as

19 follows:

20   A.   That the '193 patent has been infringed by Zillow;

21   B.   That Zillow's infringement of the '193 patent has been and continues to be willful;

22   C.   An injunction against further infringement of the '193 patent;

23   D.   That the '676 patent has been infringed by Zillow;

24   E.   That Zillow's infringement of the '676 patent has been and continues to be willful;

25   F.   An injunction against further infringement of the '676 patent;

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1   G.   That the '234 patent has been infringed by Zillow;

2   H.   That Zillow's infringement of the '234 patent has been and continues to be willful;

3   I.   An injunction against further infringement of the '234 patent;

4   J.   That the '414 patent has been infringed by Zillow;

5   K.   That Zillow's infringement of the '414 patent has been and continues to be willful;

6   L.   An injunction against further infringement of the '414 patent;

7   M.   That the '168 patent has been infringed by Zillow;

8   N.   That Zillow's infringement of the '168 patent has been and continues to be willful;

9   O.   An injunction against further infringement of the '168 patent;

10   P.   An award of damages adequate to compensate IBM for the patent infringement that

11   has occurred, together with pre-judgment interest and costs;

12   Q.   An award of all other damages permitted by 35 U.S.C. § 284, including increased

13   damages up to three times the amount of compensatory damages found;

14   R.   That this is an exceptional case and an award to IBM of its costs and reasonable

15   attorneys' fees incurred in this action as provided by 35 U.S.C. § 285; and

16   S.   Such other relief as this Court deems just and proper.

17   **<u>DEMAND FOR JURY TRIAL</u>**

18   IBM hereby demands trial by jury on all claims and issues so triable.

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DATED this 4th day of November, 2020.

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